

**Amendment and Response**

Applicant: Hong-Jyh Li et al.

Serial No.: 10/799,910

Filed: March 12, 2004

Docket No.: 2004P50029US/I331.135.101

Title: ION IMPLANTATION OF HIGH-K MATERIALS IN SEMICONDUCTOR DEVICES

**RECEIVED  
CENTRAL FAX CENTER****JAN 11 2007****REMARKS**

The following remarks are made in response to the Non-Final Office Action mailed August 11, 2006. Claims 1-5, 7-15, and 17 were rejected. With this Response, claims 1, 7, and 15 have been amended. Claims 1-5, 7-15, and 17 remain pending in the application and are presented for reconsideration and allowance.

**Claim Rejections under 35 U.S.C. § 102**

The Examiner rejected claim 15 under 35 U.S.C. § 102(e) as being anticipated by Jeon, U.S. Patent No. 6,790,755 ("Jeon").

Jeon fails to teach or suggest the invention recited by amended independent claim 15 including **a conductive buffer layer implanted with a species between the gate electrode and the high-k gate dielectric layer.**

Jeon discloses a standard-k dielectric layer 110c. (Col. 7, lines 33-35). Layer 110c is not a conductive layer. In contrast, claim 15 recites a *conductive* buffer layer.

In view of the above, Applicants respectfully submit that the above rejection of independent claim 15 under 35 U.S.C. § 102(e) should be withdrawn. Allowance of claim 15 is respectfully requested.

**Claim Rejections under 35 U.S.C. § 103**

The Examiner rejected claims 1-5, 7-14, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Jeon, U.S. Patent No. 6,790,755 ("Jeon") in view of Kim et al., U.S. Patent No. 6,621,114 ("Kim").

Jeon and Kim, either alone, or in combination, fail to teach or suggest the invention recited by amended independent claim 1 including **a conductive buffer layer implanted with a species between the high-k material layer and the gate electrode.**

Jeon discloses a standard-k dielectric layer 110c. (Col. 7, lines 33-35). Layer 110c is not a conductive layer. In contrast, claim 1 recites a *conductive* buffer layer. Kim also fails to teach or suggest a conductive buffer layer.

In view of the above, Applicants respectfully submit that the above rejection of independent claim 1 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 2-5, 7-14, and 17 further define patentably distinct independent claim 1 or 15. Accordingly,

**Amendment and Response**

Applicant: Hong-Jyh Li et al.

Serial No.: 10/799,910

Filed: March 12, 2004

Docket No.: 2004P50029US/I331.135.101

Title: ION IMPLANTATION OF HIGH-K MATERIALS IN SEMICONDUCTOR DEVICES

---

**RECEIVED  
CENTRAL FAX CENTER  
JAN 11 2007**

Applicants believe these dependent claims are also allowable over the cited references.

Allowance of claims 1-5, 7-14, and 17 is respectfully requested.

**CONCLUSION**

In view of the above, Applicants respectfully submit that pending claims 1-5, 7-15, and 17 are in form for allowance and are not taught or suggested by the cited references.

Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-5, 7-15, and 17 is respectfully requested.

**Amendment and Response**

Applicant: Hong-Jyh Li et al.

Serial No.: 10/799,910

Filed: March 12, 2004

Docket No.: 2004P50029US/1331.135.101

Title: ION IMPLANTATION OF HIGH-K MATERIALS IN SEMICONDUCTOR DEVICES

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicants' representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Steven E. Dicke at Telephone No. (612) 573-2002, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

**Dicke, Billig & Czaja**  
Fifth Street Towers, Suite 2250  
100 South Fifth Street  
Minneapolis, MN 55402

Respectfully submitted,

Hong-Jyh Li et al.,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC  
Fifth Street Towers, Suite 2250  
100 South Fifth Street  
Minneapolis, MN 55402  
Telephone: (612) 573-2002  
Facsimile: (612) 573-2005

Date: January 11, 2007  
SED:kmh

Steven E. Dicke  
Steven E. Dicke  
Reg. No. 38,431

**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 11<sup>th</sup> day of January, 2007.

By: Steven E. Dicke  
Name: Steven E. Dicke